



The Women of the Manhattan Project

March 1, 2018

Los Alamos National Laboratory was founded 75 years ago as one of the sites of the Manhattan Project, and although the story of its role in the development of first atomic bomb is now well known, less familiar is the contribution of the nearly 640 women who worked on the Project at Los Alamos.

In 1943 Manhattan Project leaders J. Robert Oppenheimer and General Leslie R. Groves scoured the country looking for anyone that would help achieve their goal: to end World War II by building a “gadget” that exploited the newly discovered phenomenon of nuclear fission. They did not discriminate; women or men, young or old, Ph.D. or technical experience—all were considered if they had something to contribute.

Indeed, to maximize the productivity of the small Los Alamos population, couples that both had valuable skills were particularly prized.

One such valued couple included physicist [Elizabeth “Diz” Riddle Graves](#) - one of only a few scientists in the country who had experience with fast-neutron scattering and a device called a Cockcroft-Walton accelerator. She had received her doctorate in nuclear physics at the University of Chicago; however, she was working only as a volunteer researcher at the University of Texas in Austin because her husband Alvin’s faculty position there precluded her from paid employment in the same department. Both Elizabeth and Alvin went on to play important roles in the development of the “gadget”.

Recruiting from Northern New Mexico

A significant effort was also made by the Project leadership to recruit locally. [Agnes Naranjo](#) (later Naranjo Stroud-Lee) was a member of the Santa Clara Pueblo who came to Los Alamos in 1945 when she finished her Bachelor of Science degree at the University of New Mexico.

As a research technician in hematology for the Manhattan Project, Naranjo gained valuable work experience studying the effects of radiation on blood—something that ultimately shaped her career after the war. She returned to school, earned a Ph.D. in zoology, and pursued a career in radiation biology and cytogenetics.

She went on to serve as director of the Department of Tissue Culture at the Pasadena Foundation for Medical Research and was a senior scientist at the Jet Propulsion Laboratory, also in Pasadena, California, before returning to Los Alamos to be a radiobiologist in the Lab’s Mammalian Biology Group.

Physicist [Elda Anderson](#) was recruited to Los Alamos from Princeton University, where she worked in the Office of Scientific Research and Development. She is credited

with preparing the first sample of nearly pure uranium-235 acquired by Los Alamos for experimentation.

Mathematician [Naomi Livesay](#) was working as a teaching assistant at the University of Illinois in 1943 when she received an invitation to join the Project. She supervised the use of the IBM computer used to calculate the predicted shock wave from an implosion-type bomb.

“One of our shock-wave calculations took us nearly three months, working six days a week, 24 hours a day, two operators per shift,” describes Livesay in her unpublished memoir.

Gateway to the laboratory

Beyond the scientific work, many other women played important roles as part of the Project, including Dorothy McKibben, who ran the office at 109 East Palace Avenue in Santa Fe that served as a gateway to the then-secret laboratory.

When President Truman made a statement revealing the Manhattan Project he said, “What has been done is the greatest achievement of organized science in history. It was done under high pressure and without failure.”

This achievement is a tribute not just to the famous scientists whose names we all know, but also to the thousands of women and men – many of them from Northern New Mexico – whose stories are less well known, but no less necessary.

For more information on the women scientists of the Secret City, [read the full story in 1663](#) – the Laboratory’s science magazine.

Los Alamos National Laboratory

www.lanl.gov

(505) 667-7000

Los Alamos, NM

Managed by Triad National Security, LLC for the U.S Department of Energy's NNSA

